



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,779	06/26/2002	Robert Charles Thied	9052-106	6112

20792 7590 11/20/2003  
MYERS BIGEL SIBLEY & SAJOVEC  
PO BOX 37428  
RALEIGH, NC 27627

EXAMINER
----------

NICOLAS, WESLEY A

ART UNIT	PAPER NUMBER
----------	--------------

1742

DATE MAILED: 11/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/049,779	Applicant(s) THIED ET AL.	
	Examiner Wesley A. Nicolas	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16,21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16,21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____   |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                              | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>06112002</u> | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Objections***

1. Claims 5 and 6 are objected to because of the following informalities: line 2, "anode" should be changed to --anion--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 5, 7-12, 14-15, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomczuk et al. (5,009,752).

Claim 1 is rejected because Tomczuk et al. teach a method for separating a metal from a composition including said metal, the method comprising:

- forming an electrolytic cell having an anode (Fig. 1, numeral 11), a cathode (Fig. 1, numeral 6), and an electrolyte (Fig. 1, numeral 4);
- the anode comprising a composition including said metal and the electrolyte comprising an ionic liquid (cols. 1 and 2),

- applying a sufficient potential difference between the anode and the cathode to cause the metal to transfer from the anode to the cathode and to be deposited thereon (claim 1: "providing an electric current....to form uranium cations and plutonium cations").

Claim 2 is rejected because Tomczuk et al. teach that the ionic liquid comprises a cation component (claim 1: "providing an electric current....to form uranium cations and plutonium cations").

Claim 5 is rejected because Tomczuk et al. teach that the anion is selected from a group consisting of halide (col. 4, "CaCl<sub>2</sub>").

Claim 7 is rejected because Tomczuk et al. teach that the ionic liquid is pre-loaded with metal ions (col. 1, "U<sup>+3</sup> and U<sup>+4</sup> cations").

Claim 8 is rejected because Tomczuk et al. teach that the ionic liquid is pre-loaded with metal ions by the addition of a soluble uranium salt (col. 4, "salts containing UCl<sub>3</sub>/PuCl<sub>3</sub>").

Claim 9 is rejected because Tomczuk et al. teach that the ionic liquid is pre-loaded with uranium ions by displacement of a metal chloride (cols. 2-4).

Claim 10 is rejected because Tomczuk et al. teach that the metal chloride comprises CdCl<sub>2</sub> (col. 2).

Claim 11 is rejected because Tomczuk et al. teach that the ionic liquid is pre-loaded with uranium ions by destructive reduction of the electrolyte (cols. 4-6: e.g. "uranium chemically consumed").

Claim 12 is rejected because Tomczuk et al. teach the method further comprises depositing purified metal at the cathode (claim 1: "providing an electric current....to form uranium cations and plutonium cations").

Claim 14 is rejected because Tomczuk et al. teach that the composition to be separated is irradiated nuclear fuel (Abstract: e.g. "recovery of uranium and plutonium from spent metal clad fuel pins").

Claim 15 is rejected because Tomczuk et al. teach that the metal to be separated comprises uranium (Abstract and cols. 2-4: "uranium").

Claim 21 is rejected because Tomczuk et al. teach that the metal to be separated comprises plutonium (Abstract and cols. 2-4: "plutonium").

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 1742

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomscuk et al. (5,009,752), as applied to claim 1 above.

Tomscuk et al. Are as applied, argued, and disclosed above and incorporated herein but fail to specifically teach that the ionic liquid is purified for further use.

Claim 16 is rejected because it would have been obvious and within the ordinary skill in the art at the time the invention was made to have modified Tomczuk et al. to comprise purifying the ionic liquid for further use because purification and/or recycling process fluid is an obvious engineering design improvement that comes from ecological and economic design considerations. Changing ecological and economic considerations do not make obvious expedient into unobvious improvement. Ex parte Fuller, 172 USPQ 317.

***Allowable Subject Matter***

7. Claims 3-4, 6, and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Application/Control Number: 10/049,779  
Art Unit: 1742

Page 6


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley Nicolas whose telephone number is (703)305-0082. The examiner can normally be reached on Mon.-Thurs. from 7am to 5pm.

The Supervisory Primary Examiner for this Art Unit is Roy King whose telephone number is (703) 308-1146.

The fax number for this Group is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

  
WESLEY A. NICOLAS  
PATENT EXAMINER

November 13, 2003